UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,514	11/26/2003	Sim Dong-Hi	2060-3-92	1835

35884 7590 04/02/2008

LEE, HONG, DEGERMAN, KANG & SCHMADEKA
660 S. FIGUEROA STREET
Suite 2300
LOS ANGELES, CA 90017

EXAMINER	
GHULAMALI, QUTBUDDIN	
ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
04/02/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,514	HONG-HI ET AL.	
	Examiner	Art Unit	
	Qutbuddin Ghulamali	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,7,12 and 15-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 4, 7, 12, 15-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Remarks/Amendment filed 05/08/2007. Applicant's amendment to claims 1 and 7 is acknowledged and the 35 U.S.C. 112, second paragraph rejection is hereby withdrawn.

2. The amendment to the specification, page 1, is acknowledged and approved.

3. The objection to Claim 22 and 232 is hereby withdrawn in view of the amendments:

Response to Remarks/Amendment

4. Applicant's remarks/amendment, see pages 11-13, filed 12/31/2007, with respect to the rejection(s) of claim(s) 20, 22-27, 29, 30, 32, 34-37 under 35 U.S.C 103(a), have been fully considered but are not persuasive. The examiner regretfully withdraws the allowability of claims 1, 4, 7, 12 and 15-19 in view of newly found art. The rejection based on the newly found art follows.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 1, is rejected under 35 U.S.C. 103 (a) as being unpatentable over Kim et al (US Pub. 2002/0004924) in view of Li et al (US Pub. 2006/0209765) and further in view of Corrigan III (USP 6,901,551).

Regarding claim 1, Kim discloses a signal processing apparatus, comprising:
a feedback signal reception unit receiving status information of at least one channel (as disclosed in page 1, section 0008, 0009; page 2, section 0020, a feedback of reception signal is inherently implied and is implicitly and explicitly shown with reference to fig. 1A as a reverse operation of ACK/NAK from receiver to transmitter);
a data block segmentation unit (422) receiving one of the first data blocks (original) to segment into at least one or more of the second data blocks (page 5, section 0065);
a CRC attachment unit (fig. 4, element 431) attaching a CRC to each of the at least one or more of the second data blocks (page 5, section 0065, 0067);
a data block allocation unit allocating (rate matching or allocation) the at least one or more of the second data blocks according to an antenna via which the at least one or more of the second data blocks will be transmitted (page 5, section 0067, 0066).
Kim, however, does not explicitly disclose at least one or more antennas to transmit the at least one or more of the second data blocks. However, Li discloses (abstract) a plurality of transmit and receive antenna receive data block signals (page 1, section 0012). It would have been obvious to a person skilled in the art at the time the invention was made to utilize a system with transmit and receive antennas as taught by Li in the system of Kim because it can facilitate the transmission and reception of data signals. Note the use of antennas is inherently implied in Kim even though it is not explicitly

shown (page 2, section 0021). The combination of Kim and Li however does not explicitly show CRC is differently (independently) attached to each of the one or more data blocks. However, Corrigan, discloses CRC is independently attached to each of the one or more data blocks (col. 4, lines 42-64). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use data with independently attached CRC as taught by Corrigan in the combined apparatus of Kim and Li because the use of CRC for each one or more data blocks can mitigate errors in storing and retrieving of critical data effectively and reliably by allowing check of the integrity of data being transferred or transmitted to different parts of the system.

7. Claims 4, 7, 12, 15-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US Pub. 2002/0004924) in view of Li et al (US Pub. 2006/0209765) and Corrigan (USP 6,901,551) and further in view of Evan et al (USP 6,774,864).

Regarding claim 4, Kim, Li and Corrigan in combination disclose all limitations of the claim above except does not explicitly disclose an antenna selection unit determining at least on of the second data blocks is transmitted via at least one of the at least one or more transmitting antennas. Evans, however, discloses an antenna selection unit determining at least on of the second data blocks is transmitted via at least one of the at least one or more transmitting antennas (abstract; col. 1, lines 44-63; col. 3, lines 35-67; note that the antenna selection ascertain the individual channel strength of data signals much similar to determining the transmission of data from

transmitter to receiver via multiple transmit and multiple receive antennas). It would have been obvious to a person skilled in the art at the time the invention was made to utilize an antenna selection unit as taught by Evans in the combined arts of Kim, Li and Corrigan because it can provide efficient use and determination of data signals and minimize potential redundancy in received signals

Regarding claim 7, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claimed above and therefore, it would have been obvious, considering the aforementioned rejection for the above claim 1 to a person of ordinary skill at the time of invention to present the claim in an alternate manner to achieve the desired result.

Regarding claim 12, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claimed above and therefore, it would have been obvious, considering the aforementioned rejection for the above claim 4 to a person of ordinary skill at the time of invention to present the claim in an alternate manner to achieve the desired result.

Regarding claim 15, Kim discloses an apparatus comprising:
a CRC attachment unit (fig. 4, element 431) attaching a CRC to each of the at least one or more of the second data blocks (page 5, section 0065, 0067). Kim does not explicitly disclose a plurality of antennas for transmitting each CRC-attached data block via each of the plurality of antennas to a single user equipment (UE), wherein the CRC is differently attached to each of the at least two data blocks. However Li discloses a plurality of antennas for transmitting each CRC-attached data block via each of the

plurality of antennas to a single user equipment (page 1, section 0012). It would have been obvious to a person skilled in the art at the time the invention was made to utilize a system with transmit and receive antennas as taught by Li in the system of Kim because it can facilitate the transmission and reception of data signals. Note the use of antennas is inherently implied in Kim even though it is not explicitly shown (page 2, section 0021). The combination of Kim and Li however does not explicitly show CRC is differently (independently) attached to each of the one or more data blocks. However, Corrigan, discloses CRC is independently attached to each of the one or more data blocks (col. 4, lines 42-64). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use data with independently attached CRC as taught by Corrigan in the combined apparatus of Kim and Li because the use of CRC for each one or more data blocks can mitigate errors in storing and retrieving of critical data effectively and reliably by allowing check of the integrity of data being transferred or transmitted to different parts of the system.

Regarding claim 16, 17, 18 Kim discloses an apparatus comprising:

a feedback signal reception unit for receiving positive acknowledgement (ACK) or a negative acknowledgement (NACK) of at least one channel (page 1, section 0008, 0011, 0012);

a data block segmentation unit (422) for segmenting each of the plurality of data blocks into at least two segmented data blocks (page 5, section 0065, 0067); and

a data block allocation unit for allocating the at least two segmented data blocks (page 5, section 0067, 0066).

Kim, however, does not explicitly disclose at least one or more antennas to transmit the at least one or more of the second data blocks. However, Li discloses (abstract) a plurality of transmit and receive antenna receive data block signals (page 1, section 0012). It would have been obvious to a person skilled in the art at the time the invention was made to utilize a system with transmit and receive antennas as taught by Li in the system of Kim because it can facilitate the transmission and reception of data signals. Note the use of antennas is inherently implied in Kim even though it is not explicitly shown (page 2, section 0021).

Regarding claim 19, Kim, Li and Corrigan combined disclose all limitations of the claim above, except antennas not selected for transmitting CRC attached data blocks are used to transmit dummy bit. The transmit dummy bits are well known in the art and to attach dummy bits would be obvious to a person of skill in the art to utilize for transmission.

Regarding claim 20, Li discloses a signal processing apparatus, comprising:
a signal reception unit for receiving at least two data blocks (first block and a second data block, page 1, section 0012) with cyclical redundancy check (CRC) attached with each data block via at least one of a plurality of antennas (a cyclic extension is added by subsystem 26 prior to transmission by an antenna and the same is received by a receive portion or unit 32) (page 1, section 0006, 0007, 0012);
a channel estimation unit (a channel parameter estimator CPE) for checking the CRC attached data block page 1, section 0007, 0012; page 2, section 0025, 0026). Li; does not explicitly disclose a feedback signal transmission unit transmitting one of a positive

acknowledgement (ACK) and a negative acknowledgement (NACK) based on the CRC check of each of the antennas. However, Kim discloses a feedback signal reception unit receiving status information of at least one channel according to the CRC check results) in a plurality of antennas (as disclosed in page 1, section 0008, 0009, 0011; page 2, section 0020, a feedback of reception signal is inherently implied and is implicitly and explicitly shown with reference to fig. 1A as a reverse operation of ACK/NAK from receiver to transmitter). It would have been obvious to one skilled in the art at the time of the invention to utilize a feedback signal transmission unit transmitting the channel status information as taught by Kim in the system of Li because it can provide source data transmission errors in original signal to improve the system performance. The combination of Kim and Li disclose all limitations of the claim except CRC is independently attached to each of the at least two data blocks. However, Corrigan discloses a plurality of data blocks wherein each data block is shown independently CRC attached (col. 4, lines 42-64). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use data with independently attached CRC as taught by Corrigan in the combined apparatus of Kim and Li because the use of CRC for each one or more data blocks can mitigate errors in storing and retrieving of critical data effectively and reliably by allowing check of the integrity of data being transferred or transmitted to different parts of the system.

Regarding claim 21, Kim, Li and Corrigan combined disclose all limitations of the claim above, except antennas not selected for transmitting CRC attached data blocks are used to transmit dummy bit. Transmit of bits or dummy or redundant bit attachment

to otherwise known bits are well known in the art of communications and to attach dummy bits would be obvious to a person of skill in the art to utilize for transmission.

Regarding claim 22, Kim discloses an apparatus comprising:

a CRC attachment unit (fig. 4, element 431) attaching a CRC to each of the at least one or more of the second data blocks (page 5, section 0065, 0067); checking CRC from each received CRC attached data block (page 1, section 0009); a feedback signal reception unit for receiving positive acknowledgement (ACK) or a negative acknowledgement (NACK) of at least one channel (page 1, section 0008, 0011, 0012) Kim does not explicitly disclose a plurality of antennas for transmitting each CRC-attached data block via each of the plurality of antennas to a single user equipment (UE), wherein the CRC is differently attached to each of the at least two data blocks. However Li discloses a plurality of antennas for transmitting each CRC-attached data block via each of the plurality of antennas to a single user equipment (page 1, section 0012). It would have been obvious to a person skilled in the art at the time the invention was made to utilize a system with transmit and receive antennas as taught by Li in the system of Kim because it can facilitate the transmission and reception of data signals. Note the use of antennas is inherently implied in Kim even though it is not explicitly shown (page 2, section 0021). The combination of Kim and Li however does not explicitly show CRC is differently (independently) attached to each of the one or more data blocks. However, Corrigan, discloses CRC is independently attached to each of the one or more data blocks (col. 4, lines 42-64). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use data with

independently attached CRC as taught by Corrigan in the combined apparatus of Kim and Li because the use of CRC for each one or more data blocks can mitigate errors in storing and retrieving of critical data effectively and reliably by allowing check of the integrity of data being transferred or transmitted to different parts of the system.

As to claims 23, 34, Kim discloses CRC check is performed to acquire channel quality information (page 2, section 0018; page 5, section 0065).

Regarding claims 24, 35, Kim discloses channel quality information is based on quality of the channel through which the CRC-attached data block is transmitted (page 2, section 0018; page 1, section 0011).

Regarding claims 25, 36, Kim discloses the ACK is generated if the channel quality information is good (page 1, section 0011).

As per claims 26, 37, Kim discloses the NACK is generated if the channel quality information is bad (page 1, section 0011).

As to claims 27 and 30, HARQ II type inherently implies use of several data blocks (includes at least two data blocks, a code block segmentation part 432 performs block segmentation) transmitted from the transmitter to the receiver (see page 2, section 0021; page 5, section 0067).

Regarding claim 28, 31 and 33, Kim, Li and Corrigan combined disclose all limitations of the claim above, except antennas not selected for transmitting CRC attached data blocks are used to transmit dummy bit. The transmit dummy bits are well known in the art and to attach dummy bits would be obvious to a person of skill in the art to utilize for transmission.

Regarding claim 29 and 32, Kim discloses a data processing apparatus, comprising:

attaching cyclic redundancy check (CRC) to each of the at least two data blocks (a CRC attachment unit (fig. 4, element 431) attaching a CRC to each of the at least one or more of the second data blocks) (page 5, section 0065, 0067);

checking the CRC from each of the received CRC attached data block (a channel estimation unit (a channel parameter estimator CPE) for checking the CRC attached data block) (page 1, section 0007, 0012; page 2, section 0025, 0026).

transmitting a positive acknowledgement (ACK) or a negative acknowledgement (NACK) based on the CRC check via each of the antennas (as disclosed in page 1, section 0008, 0009, 0011; page 2, section 0020, a feedback of reception signal is inherently implied and is implicitly and explicitly shown with reference to fig. 1A as a reverse operation of ACK/NAK from receiver to transmitter). Kim even though discloses transmitting each CRC attached data block to a receiver receiving at least one CRC attached data block, does not explicitly disclose a plurality of antennas transmitting to a single user. However, Li discloses (abstract) a plurality of transmit and receive antenna receive encoded data block signals based on CRC codes and/or signal quality (page 1, section 0012; page 4, section 0041, 0042). It would have been obvious to a person skilled in the art at the time the invention was made to utilize a system such as a MIMO system with transmit and receive antennas as taught by Li in the system of Kim because it can facilitate the transmission and reception of data signals with higher quality and reduced interference error. Note the use of antennas is inherently implied in

Kim even though it is not explicitly shown (page 2, section 0021). The combination of Kim and Li however does not explicitly show CRC is differently (independently) attached to each of the one or more data blocks. However, Corrigan, discloses CRC is independently attached to each of the one or more data blocks (col. 4, lines 42-64). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use data with independently attached CRC as taught by Corrigan in the combined apparatus of Kim and Li because the use of CRC for each one or more data blocks can mitigate errors in storing and retrieving of critical data effectively and reliably by allowing check of the integrity of data being transferred or transmitted to different parts of the system.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutbuddin Ghulamali whose telephone number is (571)-272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.
March 30, 2008.

/CHIEH M FAN/
Supervisory Patent Examiner, Art Unit 2611